WHAT IS CLAIMED IS:

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1.   A transmitter connected to a ring type network, comprising:

a packet generation and transmission part generating a packet to cause at least one other

10   transmitter in the ring type network to set a node number assigned to the at least one other transmitter in the packet, and circulating said packet in the ring type network; and

a node number detection part, in response

15   to receipt of the circulated packet, reading at least one node number set by the at least one other transmitter from the packet and detecting an available node number that is not assigned to the at least one other transmitter with reference to the at least one

20   read node number.

25   2.   The transmitter as claimed in claim 1, further comprising a self-node number setting and transmission part, in response to receipt of the packet generated by another transmitter in the ring type network, setting a self-node number of the

30   transmitter in the packet and sending the packet to another transmitter in the ring type network.

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3.   The transmitter as claimed in claim 2, wherein:

the self-node number setting and transmission part reads a ring number to identify the ring type network from the received packet;

when the ring number and a ring number of a
5 ring type network to which the transmitter belongs are the same, the self-node number setting and transmission part sets the self-node number in the packet and sends the packet to the another transmitter; and

10 on the other hand, when the ring number and the ring number of the ring type network to which the transmitter belongs are not the same, the self-node number setting and transmission part sends the packet to the another transmitter without setting the self-
15 node number in the packet.

20 4. A transmitter connected to a ring type network, comprising:

a packet generation and transmission part generating a packet to cause at least one other transmitter in the ring type network to set a node
25 number assigned to the at least one other transmitter in the packet and circulating said packet in the ring type network; and

a duplicated node number detection part, in response to receipt of the circulated packet, reading
30 at least node number set by the at least one other transmitter from the packet and determining whether or not any of the at least one read node number and a self-node number of the transmitter are the same.

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5. The transmitter as claimed in claim 4, further comprising a self-node number setting and transmission part, in response to receipt of the packet generated by another transmitter in the ring type network, setting a self-node number of the transmitter in the packet and sending the packet to another transmitter in the ring type network.

6. The transmitter as claimed in claim 5, wherein:

the self-node number setting and transmission part reads a ring number to identify the ring type network from the received packet;

when the ring number and a ring number of a ring type network to which the transmitter belongs are the same, the self-node number setting and transmission part sets the self-node number in the packet and sends the packet to the another transmitter; and

on the other hand, when the ring number and the ring number of the ring type network to which the transmitter belongs are not the same, the self-node number setting and transmission part sends the packet to the another transmitter without setting the self-node number in the packet.

7. A transmitter connected to a ring type network, comprising:

a packet generation and transmission part generating a packet to cause at least one other transmitter in the ring type network to set a node

number assigned to the at least one other transmitter in the packet and circulating said packet in the ring type network; and

a topology data generation part, in response to receipt of the circulated packet, reading at least one node number set by the at least one other transmitter from the packet and generating topology data regarding the ring type network based on the at least one node number.

8. The transmitter as claimed in claim 7, further comprising:

a topology data transmission part generating a packet including the generated topology data and circulating the packet in the ring type network; and

a topology data reflection part, in response to receipt of the packet, reading the topology data from the packet and reflecting the topology data to a database of the transmitter.

9. The transmitter as claimed in claim 8, wherein the topology data reflection part:

reads a target node number from the packet; and

when the target node number and a self-node number of the transmitter are the same, reads the topology data from the packet and reflects the topology data to the database.

10. The transmitter as claimed in claim 8, wherein the topology data reflection part:

reads a ring number to identify the ring type network from the received packet; and

when the ring number and a ring number of a ring type network to which the transmitter belongs are the same, reads the topology data from the packet and reflects the topology data to the database.

11. A method of detecting an available node number that is not assigned to any of at least one transmitter in a ring type network, the method comprising the steps of:

generating a packet to cause the at least one transmitter in the ring type network to set a node number assigned to the at least one other transmitter in the packet and circulating said packet in the ring type network; and

reading, in response to receipt of the circulated packet, at least one node number set by the at least one transmitter from the packet and detecting the available node number with reference to the at least one read node number.

12. A method of determining whether there is an duplicated node number in a ring type network, the method comprising the steps of:

generating a packet to cause at least one transmitter in the ring type network to set a node

number assigned to the at least one transmitter in the
packet and circulating said packet in the ring type
network; and

5 reading, in response to receipt of the
circulated packet, at least node number set by the at
least one transmitter from the packet and determining
whether or not any of the at least one read node
number and any of at least one self-node number of the
at least one transmitter are the same.

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13. A method of generating topology data
15 regarding a ring type network including at least one
transmitter, the method comprising the steps of:
generating a packet to cause the at least
one transmitter in the ring type network to set a node
number assigned to the at least one transmitter in the
20 packet and circulating said packet in the ring type
network; and
reading, in response to receipt of the
circulated packet, at least one node number set by the
at least one transmitter from the packet and
25 generating the topology data regarding the ring type
network based on the at least one node number.